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Fisheries Oceanography in the Virgin Islands:  
Preliminary Results from a Collaborative Research Endeavor

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A multi-species spawning aggregation located on the banks south of St. Thomas includes several economically important fish species, including dog snapper, yellowfin grouper, Nassau grouper, and tiger grouper. Increased fishing pressure on these banks has prompted the Caribbean Fisheries Council to take actions such as seasonally closing fishing grounds and establishing Marine Protected Areas (MPAs). Due to a lack of biological and oceanographic data for the region, these management decisions have been based on professional judgment rather than scientific data.

In response to this situation, NOAA scientists from SEFSC and AOML began an interdisciplinary field study in the region in 2007. Research cruises utilize biological sampling techniques such as MOCNESS, neuston, and bongo trawl tows simultaneously with standard physical sampling methods such as CTD/LADCP casts, hull-mounted water velocity measurements, and Lagrangian drifter deployments. The three year project aims to determine how the unprotected banks of the Virgin Islands and surrounding region, the seasonally closed banks and MPAs, and near-shore areas are ecologically linked in terms of larval dispersal, transport, and life history patterns. This collaboration should produce an assessment, based on scientific data, of the effectiveness of Caribbean Research Council management decisions and suggest modifications and improvements to current policy. Additionally, this project will also provide fisheries independent data, and develop ecological indices which can be integrated into stock assessment models.

Analysis of data gathered during the project's first research cruise is yielding preliminary results. A total of 26,809 fish larvae were collected from the Grammanik and Hind Banks and surrounding regions. Of this total, 585 Serranidae (grouper) and 93 Lutjanidae (snapper) larval specimens were collected. Typical sampling transects included near-shore, shelf-break, and offshore regimes. The most economically important species were recovered at the near-shore sites, south of St. Thomas, St. John, and British Virgin Islands and not on the reef /shelf-break sites as expected. Concurrent Lagrangian drifter trajectories and shipboard ADCP measurements showed a high degree of variability in regional surface water flow. Possible transport pathways as related to the spatial distribution of the larvae collected and the physical oceanography observed will be discussed.